LINNAEAN FERN BULLETIN

[VOL. III.]

(NOS. 9-12)

1895

Mo. Bot. Garden,
1899.

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LINNÆAN FERN BULLETIN No. 9.

THE PTERIDOPHYTA OF NORTH AMERICA, NORTH OF MEXICO.

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Binghamton, N. Y.:
F. White & Co., Book and Job Printers, 95 Main St.,
—1895.—

PREFACE.

In the following list of the Pteridophyta of North America it will be found that the species are arranged according to their usual grouping in tribes, families, &c., rather than alphabetically. In a list as short as this the latter method is hardly necessary, while by the present method it is hoped that it may serve not only as a catalogue of ferns, but teach the relationship of genera, tribes and families to one another also. The nomenclature of the list has been brought up to date, but owing to the necessity for brevity, synonyms as well as common names have been excluded. Several new species are here catalogued for the first time and the range of many others has been extended. The usual abbreviations for persons, states, etc., have been used. In using this list in exchanging it is suggested that the sender place a cross + before each species that he possesses, and an O before each species that he desires.

To Prof. L. M. Underwood for courtesies extended in the preparation of this catalogue, are due the thanks of

THE EDITOR.

FAMILY I. FILICES. JUSS.

Sub-Family 1. Polypodiaceæ. Presl.

Tribe 1. Acrosticheæ.

Acrostichum L.

1 aureum L. Fla.

Tribe 2. Polypodieæ.

Polypodium L.

2 vulgare L. N. A. generally.
3 falcatum Kel. Cal. to B. Col.
4 plumula H. B. K. Fla.
5 pectinatum L. Fla.
6 polypodioides L. Va. to Ill. & S.
7 thysanolepis A. Br. Ariz. Mex.
8 Californicum Kaulf. Cala.
9 Scouleri H. & G. Cala. and N.
10 aureum L. Fla.
11 phyllitidis L. Fla.
12 Swartzii Baker. Fla.

Tribe 3. Grammitideæ.

Gymnogramme Desv.

13 Ehrenbergiana Klotz. Tex. to Ariz.
14 triangularis Kaulf. Ariz. Cala. & N.

Notholæna R. Br.

15 sinuata Swz. Kaulf. Tex. to Ariz.
16 ferruginea Desv. Hook. Tex. to Ariz.
17 Parryi D. C. Eaton. Utah, Cal. Ariz.
18 Newberryi D. C. Eaton. Cala.
19 Aschenborniana Klotz. Ariz. Tex. Mex.
20 candida M. & G. Hook. Tex. N. Mex.
21 cretacea Liebm. Cala. Ariz. Mex.
22 Hookerii D. C. Eaton. Tex. Ariz.
23 Grayi Dav. Ariz. to Tex. Mex.
24 Lemmoni D. C. Eaton. Ariz.
25 Schaffneri Tourn. Underw. Tex. Mex.
26 nivea Desv. Ariz. N. Mex.
27 nivea dealbata Pursh Dav. N. Mex.
28 Fendleri Kunze. Colo. N. Mex. Ariz.
29 tenera Gillies. Utah. Cala.

Tænitis Swz.

30 lanceolata L. R. Br. Fla.

Tribe 4. Vittarieæ.

Vittaria Sm.

31 lineata L. Sm. Fla.

Tribe 5. Pterideæ.

Adiantum L.

32 capillus-veneris L. Va. to Cala. and S.
33 tenerum Swz. Fla.
34 emarginatum Hook. Cal. and N.
35 tricholepis Fee. Tex. Mex.
36 pedatum L. N. C. to Cal. and N.
37 pedatum rangiferinum Burgess. Br. Col.

Pteris L.

38 longifolia L. Fla.
39 Cretica L. Fla.
40 serrulata L. f. Ala. Ga.
41 aquilina L. North America.
42 aquilina caudata L. Hook. N. J. to Fla.
43 aquilina lanuginosa. Hook. Cal. N.

Cheilanthes Swz.

44 Californica Nutt. Mett. Cal.
45 Pringlei Dav. Ariz.
46 Wrightii Hook. Tex. to Ariz.
47 microphylla Swz. Fla. N. Mex. & S.
48 Alabamensis Kunze. Va. Ala. to Mex.
49 viscida Dav. Cala.
50 leucopoda Link. Tex.
51 lanosa Michx. Watt. N. Y. to Kan. S.
52 Cooperæ D. C. Eaton. Cala.
53 gracillima D. C. Eaton. Cal. to Idaho.
54 lendigera Cav. Swz. Ariz. Mex.
55 gracilis Fee. Mett. Ill. to Tex. Br. Am.
56 tomentosa Link. Va. to Ga., Mo. Mex.
57 tomentosa Eatoni Dav. Ariz.
58 fibrillosa Dav. Cala.
59 Parishii Dav. Cala.
60 Fendleri Hook. Tex. Col. to Cala.
61 Clevelandii Eaton. Cala.
62 myriophylla Desv. Tex. to Ariz. Mex.
63 Lindheimeri Hook. Tex. to Ariz. Mex.
64 argentea Gmel. Kunze. Alaska.

Cryptogramme R. Br.

65 acrostichoides R. Br. L. Sup. Cal. N.

Pellæa Link.

66 Breweri D. C. Eaton. Col. to Cal. & S.
67 gracilis Michx. Hook. Lab. to Pa. Ill.
68 atropurpurea L. Link. Ariz. and N.
69 aspera Hook. Baker. Tex. Mex.
70 andromedæfolia Kaulf. Fee. Cala.
71 pulchella M. & G. Fee. Tex. & N. Mex.
72 marginata Hook. Baker. Ariz. Mex.
73 ternifolia Cav. Link. Tex. and S.
74 brachyptera Moore. Baker. Cala.
75 ornithopus Hook. Cala.
76 Wrightiana Hook. Colo. & Tex. to Cal.
77 densa Brack. Hook. Cal. to B. Col.
78 Bridgesii Hook. Cala.
79 flexuosa Kaulf. Link. Tex. to Cal.
80 intermedia Mett. Tex. Ariz. Mex.

Tribe 6. Ceratopterideæ.

Ceratopteris Brong.

81 thalictroides L. Brong. Fla.

Tribe 7. Blechneæ.

Lomaria Willd.

82 spicant L. Desv. Cala. Ore. & N.

Blechnum L.

83 serrulatum Richard. Fla.

Woodwardia Sm.

84 radicans L. Sm. Cala. Ari. and Tropics.
85 Virginica L. Sm. Can. to Fla. & Mich.
86 areolata L. Moore. Me. Fla. Mich. Ark.

Tribe 8. Asplenieae.

Asplenium L.

87 serratum L. Fla.

88 pinnatifidum Nutt. Pa. to Ill. Ky. Ala.
89 ebenoides R. R. Scott. Conn. Ala. Ill.
90 platyneuron L. Oakes. Fla. to Ky. & N.
91 fontanum L. Bernh. Pa. O.
92 parvulum, M. & G. Va. to Fla. N. Mex.
93 trichomanes L. United States generally.
94 trichomanes incisum Moore. Cala. Vt.
95 monanthemum L. Ariz. Tropics.
96 viride Huds. Vt. Can.
97 dentatum L. Fla. S. Car.
98 septentrionale L. Hoffm. Colo. N. Mex.
99 augustifolium Michx. N. Eng. to Ky.
100 firmum Kunze. Fla. Ariz.
101 ruta-muraria L. Vt. to Mich. & Ky.
102 montanum Willd. Conn. N.Y. Ga. Ky.
103 Glenniei Baker. Ariz. Mex.
104 Bradleyi D. C. Eaton. N. Y. Ark.
105 rhizophyllum myriophyllum Mett. Fla.
106 cicutarium Swz. Fla. Tropics.
107 acrostichoides Swz. N. Eng. Ky. Ill.
108 filix-fœmina L. Bernh. U.S.generally.

Seolopendrium Sm.

109 scolopendrium L. Karst. N. Y. Can.

Camptosorus Link.

110 rhizophyllus L. Link. N.Eng. Wis. & S.

Tribe 9. Aspidieæ.

Phegopteris Fee.

111 phegopteris L. Underw. N. E. Va. & W.
112 hexagonoptera Michx. Fee. Can. to Fla.
113 alpestris Hoppe. Mett. Idaho. Cal. & N.
114 dryopteris L. Fee. Va. to Me. Ore.

115 dryopteris Robertiana Dav. Min. to Wash
116 tetragona Swz. Fee. Fla.
117 reptans Swz. D. C. Eaton Fla.

Dryopteris L.

118 trifoliata L. Kunze. Fla. Tex. Tropics.
119 juglandifolia H. B. K. Kunze. Tex.
120 acrostichoides Michx. Kunze. N. Eng.
121 munita Kaulf. Kunze. Cala. and N.
122 lonchitis L. Kunze. Can. Wis. Cala.
123 mohrioides Bory. Kunze. Cal. Wash.
124 aculeata L. Kunze. Cal. Wash.
125 aculeata Californica D. C. Eaton. Cal.
126 aculeata angularis D. C. Eaton. Cal.
127 aculeata Braunii Spen. Und. N.Y.&N.
128 Noveboracensis L. A. Gray. N. C. & N.
129 contermina strigosa. Fee. Underw. Fla.
[130 Nevadensis D. C. Eaton. Underw. Cal.
131 simulata Dav. Mass.
132 Montana Vogl. Kunze. Br. Col.
133 thelypteris L. A. Gray. Eastern U. S.
134 patens Swz. Kunze. Fla. to Cal.
135 unita glabra Mett. Underw. Fla.
136 fragrans L. Schott. Me. to Wis. & N.
137 Floridana Hook. Kunze. Fla.
138 cristata L. A. Gray. Canada to Ark.
139 cristata Clintoniana D. C. Eaton, N. Eng.
140 Goldieana Hook, A. Gray. Can. to Ky.
141 filix-mas L. Schott. Canada to Cal.
142 marginalis L. A. Gray. N.U.S. & Can.
143 rigida arguta Kaulf. Underw. Cal.
144 spinulosa L. Kunze. Canada & N.U.S.

145 spinulosa intermedia Willd. Can.to Ky.
146 spinulosa dilatata Hoffm. Can. & N.E.
147 Boottii Tuckerm. Underw. N. Eng.
148 patula Swz. Underw. Ariz. Mex.

Nephrolepis Schott.

149 exaltata L. Schott. Fla. Tropics.
150 acuta Swz. Presl. Fla. Tropics.

Cystopteris Bernh.

151 bulbifera L. Bernh. N. Eng. to Va.
152 fragilis L. Bernh. N. Eng. to Ariz.
153 montana Lam. Bernh. Colo. Lab. & N.

Onoclea L.

154 sensibilis L. N. Eng. to Fla. & Kans.
155 struthiopteris L. Hoffm. N. Eng. to Ill.

Woodsia R. Br.

156 Ilvensis L. R. Br. Vt. to Ky. W. & N.
157 alpina Bolt. S. F. Gray. N.Y.Vt.&N.
158 glabella R. Br. N. Y. Vt. & N.
159 scopulina D. C. Eaton. Ark. Cal. & N.
160 Oregana D. C. Eaton. Ariz. Colo. & N.
161 Mexicana Fee. Ariz. N. Mex. Mex.
162 obtusa Spreng. Torr. N. Eng. to Ariz.

Tribe 10. Dicksonieæ.

Dicksonia L'Her.

163 punctilobula Michx A. Gray.Can.toKy.

Sub-Family 2. Hymenophyllaceæ.

Trichomanes Sm.

164 Petersii A. Gray. Ala.
165 radicans Swz. Ala. Tenn. Ky.

Sub-Family 3. Schizaceæ. Presl.

Lygodium Swz.

166 palmatum Bernh. Swz. Mass. to Fla.

Anemia Swz.

167 adiantifolia L. Swz. Fla. Tropics.

168 Mexicana Klotzsch. Texas.

Schizæa Sm.

169 pusilla Pursh. N. J. Nova Scotia.

Sub-Family 4. Osmundaceæ. R. Br.

Osmunda L.

170 regalis L. Can. to Fla. Miss.

171 Claytoniana L. Can. to Ky. and N.

172 cinnamomea L. N. Eng. to Wis. & Fla.

FAMILY II. OPHIOGLOSSACEÆ.

Ophioglossum L.

173 vulgatum L. Me. to Tenn. Tex. Ariz.

174 crotalophoroides Walt. Fla. La.

175 nudicaule Linn f. Ga. Fla. Cala.

176 palmatum Plum. Fla.

Botrychium Swz.

177 simplex E. Hitchcock. N. Eng. N. Y.

178 lunaria L. Swz. Conn. N. Y. Colo.

179 boreale Fries Milde. Unalaska.

180 matricariæfolium A. Br. N. Eng. N.Y.

181 ternatum Thunb. Swz. and var. australe, intermedium, lunarioides, obliquum, dissectum. North America.

182 lanceolatum Gmel. Angs. N. Eng.
183 Virginianum L. Swz. Me. Fla. & W.

FAMILY III. EQUISETACEAE.

Equisetum L.

184 arvense L. Va. Cala. & N.
185 telmateia Ehrh. Cala. & N.
186 pratense Ehrh. Mich. Wis. & N.
187 silvaticum L. Va. Mich. Labrador.
188 palustre L. N. Y. Wis. W. and N.
189 litorale Kuhl. Can. Vt. N. Y.
190 fluviatile L. Va. Wash and N.
191 ramosissimum Desf. Cuba. Mex.B.Col.
192 robustum A. Br. O. La. Cala. & N.
193 Mexicanum Milde. Cal. Mex.
194 hiemale L. North America.
195 laevigatum A. Br. N. C. O. La Cala.
196 variegatum Schle. N. H. Ill. and N.
197 scirpoides Michx. N.Eng. Pa. Ill. & N.

FAMILY IV. LYCOPODIACEÆ.

Lycopodium L.

198 selago L. N. C. N. Eng. Mich. & N.
199 lucidulum Michx. N. C. & N.
200 inundatum L. N. Eng. Mich. & S.
201 inundatum pinnatum. Chapm. Fla.
202 alopecuroides L. N. J. Fla. Miss.
203 cernuum L. Fla. Ala.
204 annotinum L. N. Eng. N. J. Wash.&N.

205 obscurum L. N. C. Can. and N. W.
206 alpinum L. L. Superior. Rocky Mts.
207 sabinæfolium Willd. N.J. N.Y. & N.W.
208 clavatum L. N. C. Can. and N. W.
209 Carolinianum L. N. J. Fla. La.
210 complanatum L. N. C. N. Eng. Mich.

Psilotum R. Br.

211 nudum L. Griseb. S. C. Fla.

FAMILY V. SELAGINELLACEÆ.

Selaginella Beauv.

212 rupestris L. Spring. N.Eng. Fla. Cala.
213 rupestris tortipila. A.Br. Mts. of the Car.
214 selaginoides L. Link. N. H. Colo.
215 Oregana D. C. Eaton. Ore.
216 Douglasii H. & G. Spring. Cala. and N.
217 apus L. Spring. Can. to Fla. & Tex.
218 Ludoviciana A. Br. La. Fla.
219 lepidophylla Spring. Tex. Ariz. Mex.
220 Pringlei Baker. Tex. Mex.

FAMILY VI. MARSILEACEÆ.

Marsilea L.

221 quadrifolia L. Conn.
222 macropoda Englm. Tex. N. Mex.
223 uncinata A. Br. La. Tex.
224 vestita Hook. Fla. & W. U. S.
225 tenuifolia Englm. Tex.

Pilularia L.

226 Americana A. Br. Ark. Cala. Ore.

FAMILY VII. SALVINIACEÆ.

Salvinia Schreb.

227 natans L. Hoffm. Mo. Minn. N. Y.

Azolla Lam.

228 Caroliniana Willd. N. E. to Fla. Ariz.
229 filiculoides Lam. Cal.

FAMILY VIII. ISOETACEÆ.

Isoetes L.

230 lacustris L. N. Y. and N. Eng. Cala.
231 pygmæa Englm. Cala.
232 Tuckermani A. Br. Mass.
233 echinospora Braunii Englm. Pa. and N.
234 echinospora robusta Englm. L. Champl.
235 echinospora Boottii A. Br. Englm. Mass.
236 echinospora muricata. Englm. Mass.
237 Bolanderi Englm. Colo. Cala. Wash.
238 saccharata Englm. Md.
239 riparia Englm. Me. Del. Can.
240 melanospora Englm. Ga.
241 Engelmanni A. Br. N. Eng. Ga. Mo.
242 Howellii Englm. Ore.
243 nuda Englm. Oregon.
244 flaccida Shuttl. Fla.
245 melanopoda J. Gay. Ill. Ia. Tex.
246 maritima Underw. Vancouver Island.
247 Butleri Englm. Ind. Terri. Tenn.
248 Nuttalli A. Br. Ore. Idaho. Wash.
249 Sukesdorfii Baker. Wash. Cal.

THE

LINNÆAN FERN CHAPTER

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This society was formed for the purpose of studying the ferns and fern allies by correspondence and the publication of the results, thus obtained. All who are interested in ferns are eligible to membership and are cordially invited to join. The Linnæan Fern Bulletin is the official organ and contains much that is of interest to fern students. For further information and copies of the Bulletin address either the President or Secretary.

THE LINNÆAN

Fern Bulletin.

No. 10.

President—WILLARD N. CLUTE,
Binghamton, N. Y.

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Fern Collecting.

As the collecting season again approaches, the necessity for knowing the easiest and best way of collecting and preserving ferns makes itself felt. In preparing the following notes on the subject, my thanks are due to several of our members, especially Mrs. M. L. Steveus, Messrs. C. E. Waters, C. L. Williams, and C. K. Dodge, for information re-

ceived. It may be hardly necessary to say in regard to collecting that not only should both fertile and sterile fronds be gathered but the roots as well, since many characters are taken from this part of the plant. Small ferns should certainly be pressed and mounted roots and all ; but how to mount the larger ferns without marring the beauty of the herbarium by their clumsy roots is the question. Some cut off the rootstock of such species and labelling it dry it in the sun ; others pare it down on one side until it can be pressed flat. This latter method might do for some ferns, but would never answer for the Osmundas or Woodwardias. There are two principal ways of getting the fronds from their homes to ours in safety, namely by means of the collecting-case and the plant-press. Both methods have their advantages, the former being best for bringing home plants for study, and the latter for collecting ferns for the herbarium. The collecting-case is merely a tin box like a flattened cylinder, in shape, with a door in the side two-thirds of its lenth. Boxes of this kind are for sale by dealers, but your tinsmith can make one. It should be about 18 inches long, 10 inches wide and 5 inches deep and should have a handle on one side for carrying. Ferns will keep fresh in such a case for several days if sprinkled with water. Anyone

can make a plant press. It consists of two stout sides 12 by 18 inches in size, made of wooden or wire lattice work or pasteboard. These are held together by straps. The best press is the one that will give firm pressure to the specimens and allow of as much evaporation as possible. The press is filled with "driers" cut the same sizes as the sides, and upon these much of our success in specimen making depends. For driers, the paper that will absorb the most moisture is best. Old newspapers are often used, heavy felt paper works admirably, and any bibulous paper, such as blotting paper, will do. One of our members who collects many flowering plants finds a thousand of these driers necessary! In addition to driers one needs nearly a quarter as many sheets of thin unsized paper twice the width of the driers and folded once. As each fern is gathered, it is carefully spread out in one of these thin sheets and placed between two or three driers in the press. At home the press is opened, some new driers laid on an even surface and a fern, still in its thin sheet, laid on the top, then comes more driers, another fern, and so on till the pile is high enough. Upon the top, place a board and pile upon it bricks, bags of sand, stones, books or anything that will give pressure. One member recommends sixteen bricks.

The idea is to press the specimens and absorb the moisture as soon as possible. It is recommended that the driers be taken out and dry ones substituted once a day for the first three days, but creditable specimens are often made without a change of driers. In no case should the fern be removed from the thin sheet until thoroughly dried. A lattice made of thin strips of wood is often inserted at intervals in the pile of drying specimens to facilitate evaporation. The various processes of mounting ferns will be considered in a future BULLETIN.—WILLARD N. CLUTE, Binghamton, N. Y.

Vermont Ferns.—The old saying that "Distance lends enchantment to the view" would seem to be true of fern lovers as well as others. We read of the rarities that grow in other places and wish that we lived near them. Ten chances to one a careful search will show us at least one rarity right at home. For a long time I have desired to find lycopodium inundatum and Dryopteris Bootii. The former grew in one of my favorite haunts and I did not discover it till the beginning of my second season in Johnson. The latter I found at the end of the second season in a place frequently visited. Search your locality and tell us what varieties you can find.

Look for Dryopteris Bootii wherever you find D. cristata and varieties of D. spinulosa growing near each other, as many think it is a hybrid, because it is usually found associated with the other two. Such was the case with my specimens. In Johnson I have found the following rather rare ferns, and fern allies: —Dryopteris Bootii, D. aculeata, Braunii, Asplenium angustifolium, Lycopodium inundatum, L. selago and Equisetum scirpoides. Another season I expect to find at least one more variety. There are three very variable species of which I recommend members of the chapter to collect all possible forms. Woodsia Ilvensis, Asplenium filix-foemina, and Botrychium ternatum. I think the Woodsia is almost as variable as the Botrychium. This summer I found in Stratton, Vt., on the muddy shores of an old mill-pond, an Isoetes that I thought was something rare. It had bulbs an inch in diameter, its leaves lay flat on the ground and it grew entirely out of water. Its growth was so rank that the muskrats strewed the border of the pond with the debris of their Isoetes feasts. I sent some of it to Prof. Underwood and he considered it a very robust variety of I. Braunii echinospora as its spores certainly indicate. In Bulletin No. 5 I mentioned tripinnatifid Dryopteris marginalis since then I have collected the

same thing in Johnson and have received a very similar form from Mr. C. E. Waters. There is, however, quite a marked difference in the general appearance of the Vermont and Maryland specimens.—A. J. Grout, Johnson, Vt.

A Public Fern Collection.—A recent note in the BULLETIN called attention to the interest attached to an examination of exotic ferns in green houses. We have in our park at Philadelphia, a large greenhouse open to the public, known as Agricultural Hall, a section of which is devoted to ferns, principally foreign. The place is well worth a visit by any lover of ferns, particularly if he desires to become acquainted with the foreign relatives of our native ferns. Many of the species of Dicksonia represented in the Eastern United States by D. punctilobula) are arborescent, i. e. of the tree-fern form, in tropical countries. A beautiful specimen of one of these is to be seen in Horticultural Hall; besides tree ferns of other genera not represented with us. The beautiful climbing ferns, Lygodium, are also to be seen in this collection, and bear a family likeness to our Hartford fern (L. palmatum.) Our common rock-polypody (P. vulgare) has a goodly number of foreign relatives to be seen here—the genus-

being wonderfully rich in species and widely distributed over the globe. One of the most interesting of these is P. aureum (which has a footing on United States soil in Florida.) Its fronds are probably six feet from root to tip; in outline not unlike P. vulgare, and bearing fruit dots, little, if any, bigger than its little rock cousin. Its matted root stock is covered with a dense mass of tawny "fur" (one might call it) as soft to the touch as a rabbit's - whence, doubtless, its common name "hare's foot fern." Many other ferns of this and other genera, might be mentioned, but the object of these lines is not to describe, but simply to call attention to the existance of a collection of value to any fern student, who may have an opportunity to avail himself of it. The Hall is open every day in the year—but the fern-house is closed on Sundays and legal holidays.—C. F. SAUNDERS, Phila.

Only One.—Those who are inclined to grumble at the lack of rare ferns in their own locality, will find in reading the following note from one of our most interested members that theirs is not the poorest place for ferns, after all. "The species of fern which I mentioned in a former letter is the Woodsia obtusa. It differs from specimens I found in Quebec and

Iowa only in size. The fronds are from two to three inches in height when mature. I gathered it at a jasper quarry in an adjoining county 14 miles west of this place. It is the eastern limit of the jasper outcrop. There is no congenial locality for ferns here nor for many miles in any direction. It is one vast expanse of prairie. There are no trees except the fringe of willows and cotton-woods which border the small streams, and groves set out on timber claims; no rocks except a few "hard heads" scattered over the prairie; and no fences save an occasional wire one surrounding pasture. Everywhere sun and wind have free play and such wind and sun as few ferns could thrive in I fear, with our dry atmosphere."—MARY E. CARR, Adrian, Minn.

Ferns Free.—The movement to advance the study of ferns by giving away various specimens, has met with much favor in the Chapter. The specimens mentioned in BULLETIN 8 were distributed almost as soon as offered. With this issue we have a much longer list from which to choose. Mrs. E. H. Terry has kindly sent fronds of three ferns Asplenium montanum from Lake Mahonk, N. Y., Camptosorus rhizophyllus and Woodsia Ilvensis from Dorset, Vt. Miss Frances Zirngiebel contributes some fine specimens of

Botrychium ternatum obliquum, and Mr. C. E. Waters sends a beautiful member of the fern allies, the dwarf club moss Selaginella rupestris, collected at Loch Raven, near Baltimore. Members in good standing can have single specimens of any or all of these upon the following terms. A specimen of one kind for 2 two-cent stamps, a specimen of two kinds for 3 two-cent stamps, and two cents for every additional species ordered at the same time. This small charge is necessary to pay for packing and mailing. Only one species of each kind allowed to any member. Those who can collect the rarer ferns can help many of our members by presenting a dozen or more fronds to the Chapter for free distribution. Roots and large specimens are not specially desired as they increase the cost of mailing. Address all correspondence on this subject to the president.

The Fern List.—The new list of ferns makes several changes that should be born in mind when writing for the BULLETIN. The nomenclature has been changed in various places to conform to the new order of things, and trinominals have been adopted for varieties or sub-species. The spelling of some words is revised, notably Marsilea, Anemia, hiemale, silvaticum, etc. A few obscure varieties

like Lycopodium inundatum Bigleovii have been dropped. Members who advertise "exchanges" and "wants" in this BULLETIN will mention the ferns by number; in notes and articles they will use the generic and specific names as usual.

A New Fern.—Some mention should be made of the new fern, Dryopteris simulata which has recently been discovered in New England by Mr. Geo. E. Davenport. It is intermediate between D. Noveboracensis and D. thelypteris, having the texture and venation of the former, but with lower pinnae scarcely shorter than than the latter. It is said to resemble a narrow woodland form of Asplenium filix-foemina. It has been found near Boston, and at Baltimore and will doubtless be found in other places where the other two grow. Who will be the next to report it?

Cost of the Fern-List.—As the fern-list is not entirely a Chapter account a statement of its cost is given herewith. The entire cost, including binding and mailing is $15.65. Of this sum the subscribers paid $9.71 and the Chapter $5.94. One thousand copies were issued and it was intended to send each subscriber forty-five; but the cost of mailing made it necessary to limit the number to

twenty-five. Any subscriber who wants the other twenty copies can have them upon receipt of five cents for mailing. Those subscribers who sent more than the fifty cents required will receive their copies without extra charge.

NOTES.

— Every day our Chapter grows. We have the pleasure of adding the following fern students to our roll of membership, Prof. Frank H. Underwood, Buffalo, N. Y., and Misses Addie M. Canterbury East Weymouth, Mass., Harriet Wheeler Chatham, N. Y., and H. D. Hutchinson, Mattapan, Mass. One or more others have been admitted to the Chapter, but their names have not reached the president.

— The Botanical courses conducted by Mr. Alex E. Wight, Wellesley Hills, Mass, are now open for membership. The four Courses are on Elementary Botany, Common Trees, Compositæ and Ferns and their Allies. This latter is accompanied by twenty-seven specimens which will give beginners in fern-study a very good understanding of this group of plants.

— There is one species of Adiantum called fragile because the pinnæ part from the ra-

chis so easily. Asplenium trichomanes is an example of this sort of thing among our natives. The rachises remain on the plant long after their pinnules have dropped. Why is this?

— Do not neglect an opportunity of adding a new member to our Chapter. Enclose a BULLETIN in your letters to fern-loving friends and invite them to join us, extra copies of this issue may be had free, upon application.

— WANTED.—Specimens of 27, 32, 48, 51, 56, 89, 109, 115, 144, 122, 159, 160, 165, 202, 205, 209. I can offer in exchange Nos. 180, 221, 101, 96, 158, 167, 85.—JAMES A. GROUT, Johnson, Vt.

— FOR EXCHANGE.—Nos. 36, 68. 86, 93, 101, 102, 104, 110, 112, 128, 138. 156, 162, 163, 183, 199, 200. 205, 212. 217.—C. E. WATERS, John Hopkins Univ., Baltimore, Md.

— Full sets of the BULLETIN will be sold while they last for 50 cents each. No. 9, the "fern-list" sold separately for 5 cents.

— Mr. C. E. Waters recently collected a a specimen of Asplenium trichomanes that had thirty-four fronds.

Binghamton, N. Y., May, 1895.

THE LINNÆAN

Fern Bulletin.

Vol. 3. JULY, 1895. No. 11.

Ferns in Jamaica.

For several years I have had the desire to take up the study of ferns. As each season came around and the crosiers appeared in our lowlands, I would contemplate starting a collection, but the flowering fern would have its day and be gone while other things took my attention. I looked upon making a general herbarium as an endless task, but the ferns seemed to have a limit as Gray's list gave but 62. In March '94 I laid out a few weeks trip to Jamaica. The guide book mentioned the "luxuriant and beautiful growth of ferns." Now, thinks I, is my chance to make a beginning. So I hastened to the supply store, purchased a wooden slat botanical press, 50 sheets of drying paper and a few sheets of mounts; I had no time to make

other preparations. On arriving at Port Antonio I immediatly sought the hillside and there I found ferns in luxuriance. It seemed as if Gray's 62 were staring me in the face at once. I inquired how many species were found in Jamaica and learned about 500. Alas, my vision of an easy task vanished. But I went to work with a will and soon had all the newspapers available in commission. I carried my press to the field and put the specimens between the sheets as they were gathered. I found the work became exceedingly interesting. What surprised me at first was the great diversity of forms in the fronds and their apparent imitation of other plants. Here was a three-leaved vine (Dryopteris trifoliata) resembling our poison ivy, on turning the leaf to one side I was surprised to see sporangia. Surely here is a first cousin to our hepatica. But no, a native says it is the star fern (Hemionitis palmata.) Across the swamp grows a rank clump of barberry. But the leaves do not have the fragrance of the New England tallow bush, and the brown bottom terminal pinnae locate it as Achrostichum aureum. To-day, the Christmas holly (Dryopteris triangulata) greets me and tomorrow the thorn without the rose (Davallia aculeata.) And so on through a never ending change of form, each day having its new

surprises. It is in the tropics that we get the extremes of the order. From the minute frond of the Hymenophyllum scarcely an inch long to that of the giant tree fern (Cyathea arborea) which is twelve feet long and four feet broad, is quite a range and yet it is fairly well filled with intermediate sizes. It was interesting to notice how in climbing a hill the flora would change even in a short distance. When we consider that Blue Mountain is 7500 ft. high it will be seen that there is quite a chance for the large variety credited to the island. No one who has seen the delicate Pteris longifolia or the beautiful Gymnogramme waving in the sunlight, or the Lygodium and Gleichenia climbing over the rocks and shrubery will ever forget the sight.—(GEO. F. CURTISS, Schenectady, N.Y.

Asplenium pinnatifidum. —To the lover of wild scenery the region of the lower Susquehanna, say between Columbia, Pa., and Port Deposit, presents many attractions. The broad, shallow river in some places nearly two miles wide, is hedged in on both shores by high rocky bluffs, rising abruptly from the river's edge and densely wooded to the top. The stream itself—its surface broken by countless ripples and swirls, is dotted with small islands, and masses of boulders, upon

which the seeds of many a characteristic northern plant brought down at times of flood, lodge, germinate and come to maturity, far from their "old home." In the shade of the rocky hill-sides, cut here and there into steep ravines down which rivulets drop and pool, and drop again to the river, the fern collector may find much of interest to reward his search. Asplenium montanum, it is said, has been collected in the very river bed on the high rocks there. Camptosorus rhyzophyllus, in spots, hangs in graceful masses like a fringe from the boulders in the ravines. Here asplenium ebenoides (rarest of the rare) has been found in recent years, as well as the beautiful Asplenium Bradleyi; and here also Asplenium pinnatifidum from the crevices of high rocks displays its tough, tapering fronds, not unlike minature elephants' trunks tossed aloft in air. The first sight I ever had of this last-named pretty little fern was in the Susquehanna region last summer, my eye being caught by a few tufts far above my head ensconced in a nook in the perpendicular side of a great rock, which at first glance seemed entirely bare. By a rear approach I got to the top of the rock, which though nearer to the ferns than the base had been, was still beyond reach of them. Noticing, however, that the rock was in loose, horizontal layers, I re-

moved a number of these layers one after another, and holding fast to a handy sapling, I was at last enabled to touch the coveted fronds; and a little further patient labor brought some of the plants into my hand, roots, old withered fronds and all, for they were but loosely fixed in the rock. Later in the day I found finer and more accessible specimens than these, all growing inconspicuously and at wide intervals in the clefts of great boulders, but they were not quite so precious in my eyes as the first. Most, if not all, that I collected, I think, had the dried fronds of the previous year still clinging to them—which I imagine is characteristic, the fern being evergreen. It may be suggested to fern collectors who like their herbarium specimens to present an artistic side, to allow some of the old stalks and fronds to remain when mounting. Beautiful contrasts and effects are often thus brought out that are not appreciated until the background of white paper makes them apparent.—C. F. SAUNDERS, Philadelphia.

Marsilia quadrifolia.—It is no matter of surprise that Nicholson in "Ancient History of the Earth" mentions Marsilia as one of the few remaining representatives of an ancient flora. A companion of the ginkgo and tulip trees, perhaps it was a contempo-

rary of the cycads and tree ferns. It now has but one known habitat in America-the shores of our beautiful Bantam lake the largest sheet of fresh water in the State. Here in different places half a mile or more apart it luxuriates apparently thriving alike in black mud or white sand in water a foot or more deep, where the queer little four parted leaves, like "good luck" clovers, stretch their petioles till they float on the surface, or creeping over dry sand with compact growth and leaf stems only two or three inches long. It is these scattered plants on the drier margin that I have found fruiting most abundantly, though it may also form its sporocarps under deep water. The water of the lake varies much in depth so probably Marsilia never grows above the high water mark of some season of the year. The plant is a perennial, but not evergreen though the leaves remain green till severely frosted. At several points on the lake it mats itself thickly together for many yards. The fine black roots are very strong and penetrate to a depth of several inches making it difficult for one to cut out a section of the plant and tear apart, the tangled stems. Good herbarium specimens are not so easily secured as the abundance of the plant would promise, for so soon as taken from the water and sunshine it pouts—folding its leaves like

an oxalis. Dr. Timothy Allen of New York whose summer home is in Litchfield found Marsilia years ago and sent specimens to Dr. Gray for a formal introduction or christening. When transplanted it grows readily in other places and the wonder is when it appears so indifferent to conditions of soil, etc., that it has not followed the water courses to other localities. The plant also thrives well when grown in a tub. In 1891 a botanical correspondent wrote as follows of its adopted home on the Concord river. "Marsilia quadrifolia grows in Concord river in great luxuriance having probably been transplanted there by Mr. Minot Pratt, who successfully brought many plants to the neighborhood of Concord. I first saw Marsilia at the spot where it was originally planted about eight years ago. It then covered a space about six feet square. Now it has come down the river seven miles. The river edges are lined with it to this point. Perhaps this year it will stretch another mile for it is astonishing how far it spreads."—Esther H. Thompson, Litchfield, Conn.

Ferns from Spores.—I have been much interested for two or three years in watching the germination of these plants from spores. In the fall of '89 I bought some greenhouse ferns and put them into a fernery. During the next year they all perished and in the fall

of '91 I transplanted a maranta, (the only thing left alive in the case) to a small pot and put a glass shade over it. Here it flourished and during the winter I was surprised to see ferns growing with it. They proved to be Adiantum cuneatum and one Pteris cretica. Since I had placed no Adiatum in my fernery and never had one near the case, and do not remember that I had any P. cretica at that time either, the spores must have been brought from the greenhouse in '89. I transplanted the ferns before they were old enough to fruit and took off the top soil and placed it in a new pot keeping it covered with the glass. Now there are two Pteris well started, one Adiantum one or two ferns that are probably New England species (though as they have not fruited yet I am not sure,) and several more that as yet show only the prothallium. It would seem that the spores of both the Pteris and Adiantum must have been nearly five years old when they germinated.—H. D. HUTCHINSON, Mattapan, Mass.

Ferns Free.—This month the Chapter is offered three ferns, Lygodium palmatum, Asplenium pinnatifidum, and Adiantum cuneatum. Through the kindness of Mr. W. A. Kellogg of North Amherst, Mass., speci-mens of the Climbing fern have been present-

ed to the Chapter. Mr. C. F. Saunders sends Asplenium pinnatifidum Adiantum cuneatum is said to come from South America, and is a common fern in greenhouses. The supply of Aspleniums is very limited, those who apply first will receive whole plants, a few fronds can also be supplied. The Chapter is fortunate in being offered two such rare and interesting ferns, as the first two on the list. They will be sent to members of the Linnean Fern Chapter in good standing only, upon the following terms. One species, three cents, additional species two cents each. A few specimens of Selaginella rupestris may also be had. Address all communications on this subject to WILLARD N. CLUTE, Binghamton, N. Y.

For Exchange.—Nos. 189, 198, 200, 208 230 and Pilularia globifera, C. E. Waters Johns Hopkins Univ., Baltimore, Md.

— Good species from Jamaica for Nos. 30, 31, 35, 37, 65, 81, 82, 83, 84, 109, 113, 141, 144, 148, 168, 169. G. F. Curtiss, Schenectady, N. Y.

— Specimens of Marsilia quadrifolia for Nos. 3-35, 44-65, 69–84, 86–92, 103-107, 115–150 (except 120, 128, 133, 138–9, 142) 164-5, 167-9, and many of the fern allies. Send list to Willard N. Clute, Binghamton, N. Y.

Fern Chapter Notes.

— Mr. Geo. F. Curtiss has recently issued an interesting price-list of Jamaica Ferns.

— In Mr. C. F. Saunders's article in No. 10, it should read Horticultural Hall instead of Agricultural.

— Miss Cora B. Williams of North East, Pa. and Miss Jane Wheeler of Albany, N. Y., have recently been admitted to the Chapter.

— In October the annual election of officers occurs. Those who have nominations or suggestions to make should send them to the Secretary.

— If there are any members who have not yet paid their dues they should do so at once. It will be necessary to do this if they wish to vote, hold office, or obtain the free ferns. Members *must not* send more than enough to pay dues to the end of the year.

— Anyone interested in ferns is cordially invited to join the Linnæan Fern Chapter of Agassiz Association.

The Chapter is designed to advance the study of ferns in all ways, and is fast growing in numbers. Applications should be made to C. E. Waters, Secretary, John Hopkins Univ., Baltimore, Md., or to Willard N. Clute, Pres't Binghamton, N. Y.

The Linnæan Fern Bulletin,

A QUARTERLY DEVOTED TO FERNS.

— Articles on any subject in fern study solicited.

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— Advertising rates upon application.

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WILLARD N. CLUTE, BINGHAMTON, N. Y.

This journal, now in its third year, was recently purchased of the Linnæan Fern Chapter and will be continued as a twelve paged quarterly devoted to fern-study. In size and general make up it will remain the same. No trouble will be spared in securing the best matter available for its pages, and the patronage of everyone who loves ferns is requested.

The price of the magazine is thirty-five cents a year. This certainly is cheap enough, considering the quality of the matter published. Readers will be kept abreast of the progress in their favorite study and served with timely original articles on all that pertains to ferns.

It is our intention to enlarge this journal as soon as circumstances will permit. Five hundred subscribers will warrant us in making this a sixteen page monthly. Will you aid us? This is the only publication in America devoted to fern study.

Do not think that because our pages are small there is little in them. Many larger pages contain fewer words.

To introduce the journal a copy of the next issue will be sent to any address for five cts. If sent at once a year's subscription will be given for thirty cents, or six months' subscription for fifteen cents

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The October number will be sent free to anyone who will send us an article on any branch of fern study. Make it short and concise.

Members of the Linnean Fern Chapter will receive this publication free until the end of the year.

There are but ten full sets of the BULLETIN left. They will be sold while they last for fifty cents a set. Order now. Three different numbers, our selection, will be sent for ten cents, five for fifteen cents.

THE LINNÆAN

Fern Bulletin.

Vol. 3. OCTOBER, 1895. No. 12.

Scolopendrium Scolopendrium.

This is one of the rarest of American ferns, and the possibility of finding it in some locality from which it has not been before reported may lend a zest to the botanical outing. One of its best known stations is a few miles from Syracuse, N. Y., where it grows in the chinks of limestone that everywhere crops out of the ground in that region. The writer collected it there this summer in the shady depressions of a rich woodland—its fronds almost hidden in the lush growth of other vegetation. Its immediate neigabor of the fern tribe was Cystopteris bulbifera, but within a radius of a few rods were sixteen or eighteen different species, among them the Dryopteris Goldiana, one of the noblest of our American ferns. The fronds of Scolopendrium before the sporangia are developed might easily be passed by an inexperienced collector without being suspected of being ferns. They are long narrow and entire, with a heart shaped base, and grow in tufts with a rather short, chaffy stripe. Investiga-

tion directed to the roots will usually show the crosiers of the infant fronds, and the shrivelled fronds of last year lying on the ground their backs showing the prominent lines of discharged spore cases. To some this species may seem lacking in the characteristic beauty of the fern, but like all of Nature's handiwork it grows in interest with acquaintance.—C. F. SAUNDERS, Philadelphia. Pa.

[The Hart's tongue fern or Sea-weed fern as this species is called in Europe, is there most abundant, being found on hedge banks, stone walls, the sides of wells, etc. It was first found in this country by Pursh at Chittenango, N. Y., and this was long considered the only American station for it, but it has since been found in New Brunswick, Tennessee and at Owen's Sound, Canada. Why it should grow so abundantly in Europe and be so rare here in the same latitude has never been explained.]

Blue-prints.—It may not be generally known that blue-printing can be done successfully with ferns and the prints used in many ways. In making blue-prints of ferns the two essentials are the pressed ferns and blue-print paper. This paper can be bought from any dealer in photographic or artists' materials, and can often be procured of archi-

tects. When it is exposed to direct sunlight it turns dark, and an insoluble blue compound (Prussian Blue) is formed on the paper. If any part is shielded from the sunlight this action does not take place there, and when the paper is thoroughly washed in a stream of water we have a blue ground with a white object on it, where it was shielded from the light. So that if a fern or leaf be laid on the paper before exposing it we shall have a very accurate impression of it. In one of my prints of Adiantum even the veins show. After washing the print until the covered part becomes white the color is permanent and the paper is then to be dried. In practice I place a couple of folded newspapers on a large book. On this is the sheet of prepared paper, then the fern and finally a pane of glass. The glass and newspapers are to hold the fern as closely as possible against the blue paper to avoid blurred edges in the prints. Hold this in bright sunlight three or four minutes (here is where experience comes in) and then wash the paper thoroughly to fix the print. It is often convenient to paste a strip of paper on the glass plate so that it will cover the lower edge of the blue paper, thus leaving a convenient space for writing a label. If we wet stiff paper with a saturated solution of biehromate of pota-h in water

and dry it, we can in a similar manner have white impressions on a more or less brownish background, but they are not as clear as blue-prints.—C. E. WATERS, Baltimore, Md.

Mounting Ferns.—With the close of the collecting season and the approach of the long winter evenings the fern collector begins to turn his thoughts to the best way of mounting his accumulated specimens. Before anything is done in this line, however, the specimens are usually thoroughly poisoned. This is the only certain safeguard against the depredations of insects though many collectors depend upon the presence of camphor, naphthaline or similar substances in the cabinet to keep out the pests. For poisoning, the following mixture is recommended by Mr. C. F. Saunders. "For a quart mixture, one ounce corrosive sublimate, half an ounce of glycerine, one quarter dram arsenic acid and a sufficient quantity of water. The druggist will probably give you arsenious acid if you don't watch him, but hold him down to arsenic acid as the other will not answer." Another recipe is corrosive sublimate dissolved in strong alcohol keeping the mixture just below the point of saturation. Apply with a soft brush or dip the specimens in the solution laying them afterwards between

driers under slight pressure till dry. There are many ways of mounting but the mounting paper should always be the same size, namely, 16½ inches long by 11½ inches wide. This size is used in all the principal American herbariums and specimens mounted on other sized sheets are worth much less. In colleges and other institutions where the herbarium is much consulted, the specimens are usually mounted on stiff single sheets, some of the lighter weights of cardboard being used. In many private herbariums a thin sheet is pasted to one of the long edges of the heavy sheet and serves to cover and protect the specimens. In others the sheet is cut 16½ inches long, but twice as wide as usual, being folded in the middle forming a double sheet, one-half of which holds the specimen, and the other protecting it. Some sew the specimens to the sheet; many glue them; and others place them loosely in the double sheets. Where specimens are much handled, it is doubtless best to glue them to the sheet; when it is desired to study both sides they may be laid loosely between the sheets, but for the ordinary herbarium, the specimens may best be fastened with narrow strips of adhesive paper. This can be bought at any book store for a few cents a sheet and

cut in strips to suit. Place strips where they are needed to hold the plant in place, add your label and the work of mounting is done. All the species belonging to one genus should be placed in a genus-cover—a double sheet of heavy paper in which the species-sheets lie like leaves in a book. The Genera are collected into Families or Sub-families and filed away in suitable cabinets ready for reference. In conclusion the following note from Mr. C. F. Saunders, is most pertinent: "In making an herbarium don't forget its artistic possibilities as well as the scientific value it offers. There are ten people who have an interest in the beauties of nature to one who is a student, and with a little coaxing some of the former, perhaps, can be made to delve deeper than the surface. The field for an attractive arraugement on the white mounting paper is practically limitless. Try to make your dried fern lie on the paper as it grew in its native earth, not primly or balanced like a conventional design, but with as much as possible of that unstudied grace which is the peculiar charm of this beautiful order of plants." — WILLARD N. CLUTE, Binghamton, N. Y.

Ferns Free.—Again through the generosity of Mr. C. F. Saunders members of the

Fern Chapter are able to obtain one of our rarest American ferns for the mere cost of postage. This is Scolopendrium scolopendrium collected in Onondaga Co., N. Y., specimens of which may be had on the usual terms, for which see the July issue. Mr. Saunders also sends fronds of Pellæa gracilis for distribution. A few fronds of Adiantum cuneatum may still be had. Hereafter any person who presents a species to the Chapter for distribution, shall be entitled to any of the other ferns offered during the year free of postage. Address all communications on this subject to Willard N. Clute, Binghamton, N. Y.

Ferns and Orchids.—There are few natural objects more beautiful than fern fronds, yet many persons cannot be reconciled to the fact that these plants do not blossom. Surely if they produced flowers as beautiful in comparison with other flowers as their fronds are in comparison with other leaves, we should have something extraordinary. To make the best of the situation, plant our native orchids among the growing ferns. It is just the place for them. Nothing sets off so well the nodding blooms of cypripediums or the erect spikes of the showy orchis. All of our native

orchids stand transplanting in autumn very well, and most of them may be moved in spring also.

Cosmopolitan Ferns.—A recent number of "Meehans' Monthly" calls attention to the fact that several ferns which we are accustomed to consider our own, are distributed over a very wide area. Dryopteris thelypteris is one of this kind being found in far away Japan as well as in England. Among other North American ferns that are found Europe are Dryopteris fiili-mas, D. spinulosa, D. lonchitis and D. cristata; Asplenium filix-fœmina, ruta-murana, viride, trichomanes and fontanum. The common polypody, the oak and beech ferns, and the ubiquitous bracken also occur.

Fern Chapter Notes.

— Mr. Geo. F. Curtiss will spend the winter in California adding ferns from that part of the world to his already large collection.

— Mr. C. E. Waters has recently completed a very interesting Analytical key for most of the common ferns of the Eastern States, based on the arrangement of the fibro-vascular bundles in the stipe. It is published in Johns Hopkins University Circular No. 119. Mr. Walters offers a copy to any member

who desires it and should be addressed at the University, Baltimore, Md.

Notice of Election.–In compliance with the Constitution the Executive Council have nominated two candidates for each office in the Fern Chapter. These nomiuations are merely in the way of suggestions to the members, and if anyone prefers other candidates it is desired that he shall vote for them ; in fact in no other way can the Council ascertain the wishes of the Chapter. Following are the nominations :

For President,—C. F. Saunders, Philadelphia, Pa. ; Willard N. Clute, Binghamton, N. Y.

For Vice-President,—Mrs. M. L. Stevens, Cambridge, Mass. ; Mrs. T. D. Dershimer, Squaretop, Pa.

For Secretary,--A. J. Grout, Johnson, Vt.; C. E. Waters, Baltimore, Md.

For Treasurer,—Miss Frances Zirngiebel, Roxbury, Mass. : James A. Graves, Susquehanna, Pa.

Voting begins October 1st, and ends Nov. 1st. Mrs. A. D. Dean, 329 Washington Ave., Scranton, Pa., will act as Judge of Election and to her all ballots should be sent. Ouly active members may vote.

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The number of subscriptions received during the past quarter has been very encouraging and if an equal number is received in the next three months this magazine will be permanently enlarged to sixteen pages with the January issue. The question whether or not there shall be a live journal devoted to ferns rests with the readers of this publication. Those who wish to see the magazine go on to greater usefulness, will help themselves as well as us by subscribing and inducing others to subscribe. The larger our circulation, the better we can serve them. Many who read this notice can well afford to subscribe for some friend who is, or should be interested in ferns. Why not make such persons a present of a years subscription?

If this paragraph is marked you are requested to look this issue over and consider whether such a publication is not worth the insignificant sum of thirty-five cents a year. Is it not worth that much to know what is going on among fern-students? Subscribe!

Literary Notes.

— It is said that there are but twenty-two sets of the late Prof. D C. Eaton's "Ferns of North America" remaining unsold and that no more will ever be issued since the plates have been destroyed.

— It is expected that before another BULLETIN is issued, complete sets of this journal cannot be obtained. There are but five sets remaining. Anyone who would have a complete file should order now. These sets include the Fern-list and consist of 120 pages of original contributions comprising about fifty articles and numerous notes, reports, etc. Price 60c a set; with a year's subscription to this journal 80c.

— No student of ferns should be without the "LINNÆAN FERN LIST" which contains the names of all the ferns and fern allies in North America north of Mexico, numbered consecutively and arranged according to the latest nomenclature, in sub-

families, tribes and genera. The list gives the geographical range of each species and is interleaved with blank pages for making notes. Invaluable to everyone who collects or exchanges. Price 5 cents each, 7 for 25c. Additional copies 3 cents each. Three copies and a year's subscription to this journal for 35 cents.

— There are many who love ferns, but because of the apparent difficulty in finding their proper names, let their interest end with their admiration of the plants. All such will welcome a recently issued guide-book by Edward Knobel entitled "Ferns and Evergreens of New England," which is published by Bradlee Whidden, 18 Arch St., Boston. This booklet aims at being "a simple guide for their determination" and succeeds in this admirably. There are eleven full-page plates illustrating nearly all the ferns and club mosses in North-Eastern America, with many other illustrations in the text, and one is almost able to name his specimen at a glance. Advantage is taken of every point that will render identification easy and all superfluous description is omitted. It is just the thing for beginners in fern-study and older students may well add it to their library. The price is 50 cents.